

CLAIMS

1. An analysis system for analysing data from a monitoring system for monitoring at least one characteristic of a dynamic system, said monitoring system providing characteristic data in respect of the dynamic system, the dynamic system having at least one known normal state, the analysis system comprising:
 - 5 first input means for receiving characteristic data from the monitoring system;
 - second input means for receiving confirmation information from an operator when the dynamic system is in a known normal state;
- 10 normality modelling means arranged to derive a normality model in response to received characteristic data and confirmation information, the normality model comprising data indicative of one or more known normal states;
 - prediction generating means arranged to predict future characteristic data from data in the normality model;
- 15 difference function providing means arranged to provide a difference function, said difference function being indicative of an acceptable difference between predicted future characteristic data and received characteristic data; and
 - comparison means arranged to compare predicted future characteristic data with received characteristic data in conjunction with the difference function, and to produce an abnormality signal if the difference between the predicted future characteristic data and the received characteristic data exceeds the difference function.
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2. An analysis system for analysing data from a monitoring system for monitoring at least one characteristic of a dynamic system, said monitoring system providing characteristic data in respect of the dynamic system, the dynamic system having at least one known normal sequence of states, the analysis system comprising:
 - 25 first input means for receiving characteristic data from the monitoring system;
 - second input means for receiving confirmation information from an operator when the dynamic system proceeds according to a known normal sequence of states;
- 30 normality modelling means arranged to derive a normality model in response to received characteristic data and confirmation information, the normality model comprising data indicative of one or more known normal sequences of states;
 - prediction generating means arranged to predict future characteristic data from data in the normality model;

difference function providing means arranged to provide a difference function, said difference function being indicative of an acceptable difference between predicted future characteristic data and received characteristic data; and

- 5 comparison means arranged to compare predicted future characteristic data with received characteristic data in conjunction with the difference function, and to produce an abnormality signal if the difference between the predicted future characteristic data and the received characteristic data exceeds the difference function.

3. An analysis system according to claim 1 or 2, wherein the difference function
10 providing means provides a predetermined difference function.

4. An analysis system according to claim 1, 2 or 3, wherein the difference function providing means comprises difference function deriving means for deriving a difference function from received characteristic data and the presence or absence of confirmation
15 information.

5. An analysis system according to claim 1, 2, 3 or 4, wherein the difference function providing means comprises difference function updating means for updating the difference function if confirmation information that the dynamic system is in a normal state
20 is received from an operator in response to an abnormality signal.

6. An analysis system according to any of the preceding claims, wherein the difference function providing means uses fuzzy logic.

25 7. An analysis system according to any of the preceding claims, wherein the normality modelling means comprises normality model updating means for updating the normality model in response to received characteristic data and the presence or absence of confirmation information from an operator.

30 8. An analysis system according to any of the preceding claims, wherein the normality model is a fuzzy system.

9. An analysis system according to any of the preceding claims, further comprising:
abnormality state storage means for storing data indicative of one or more known
35 abnormal states; and

abnormality comparison means for comparing received characteristic data with data in the abnormality state storage means, and producing an abnormality signal if the received characteristic data matches the data in the abnormality state storage means.

- 5 10. A method of analysing data from a monitoring system monitoring at least one characteristic of a dynamic system and providing characteristic data in respect thereof, the dynamic system having at least one known normal state, the method comprising the steps of:

receiving characteristic data from the monitoring system;
10 receiving confirmation information from an operator when the dynamic system is in a known normal state;
deriving a normality model in response to received characteristic data and confirmation information, the normality model comprising data indicative of known normal states;
15 predicting future characteristic data in response to data in the normality model;
providing a difference function, said difference function being indicative of an acceptable difference between predicted future characteristic data and received characteristic data;
comparing predicted future characteristic data with actual received characteristic
20 data in conjunction with the difference function; and
producing an abnormality signal if the difference between the predicted future characteristic data and the actual received characteristic data exceeds the difference function.

- 25 11. A method of analysing data from a monitoring system monitoring at least one characteristic of a dynamic system and providing characteristic data in respect thereof, the dynamic system having at least one known normal sequence of states, the method comprising the steps of:

receiving characteristic data from the monitoring system;
30 receiving confirmation information from an operator when the dynamic system proceeds according to a known normal sequence of states;
deriving a normality model in response to received characteristic data and confirmation information, the normality model comprising data indicative of known normal sequences of states;
35 predicting future characteristic data in response to data in the normality model;

providing a difference function, said difference function being indicative of an acceptable difference between predicted future characteristic data and received characteristic data;

comparing predicted future characteristic data with actual received characteristic data in conjunction with the difference function; and

producing an abnormality signal if the difference between the predicted future characteristic data and the actual received characteristic data exceeds the difference function.